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EXAMINER	
CHOI, PETER Y	

ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,784	GONDOH ET AL.	
	Examiner	Art Unit	
	PETER Y. CHOI	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,10 and 11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,10 and 11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 3, 4, 10 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1, 3, 4, 10, and 11, claim 1 recites that "a gap formed by being enclosed by a warp of the face side structure and a warp of the back side structure, said warps facing to each other, and a weft of the face side structure and a weft of the back side structure, said wefts facing to each other, has a smaller side and a larger side and has an average length of the smaller side between 0 μm and 50 μm." Applicants' specification as originally filed does not provide support for such a gap as claimed.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 3, 4, 10, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 3, 4, 10, and 11, claim 1 recites that "a gap formed by being enclosed by a warp of the face side structure and a warp of the back side structure, said warps facing to each other, and a weft of the face side structure and a weft of the back side structure, said wefts facing to each other, has a smaller side and a larger side and has an average length of the smaller side between 0 μm and 50 μm." It is unclear exactly what structure is claimed, specifically in regards to the claimed gap, as Applicants' appear to be reciting the gap in relation to an intersection of a warp and a weft of a face side and a warp and weft of a back side, wherein the gap is enclosed by such an intersection of the warps and wefts. Additionally, although claimed, the warps of the face side do not appear to be facing warps of the back side, and the wefts of the face side do not appear to be facing wefts of the back side. Therefore, it is unclear how the gap is enclosed by the warps and wefts claimed.

Response to Arguments

5. Applicants' arguments filed October 28, 2009, have been fully considered but they are not persuasive. Applicants argue that one can recognize a "unit" gap and the dimension of the gap. Examiner respectfully disagrees. The claimed gap is unclear as Applicants appear to be claiming a two-dimensional structure in relations to warps and wefts which necessarily comprise a three-dimensional structure. Additionally, as Applicants note, the unit gap is not a one and only one, but forms a class of unit gaps statistically depending on which closest warps and wefts are chosen. However, as shown in the Figure 1 of Applicants' specification, the warps of the face side do not appear to be facing warps of the back side, and the wefts of the face side do not

appear to be facing wefts of the back side. Therefore, it is unclear what gap and unit gap is claimed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 3, 4, 10, and 11 are rejected under 35 U.S.C. 103(a) as obvious over USPN 5,175,034 to De La Porte in view of USPN 6,325,110 to Scari.

Regarding claims 1, 3, 4, 10, and 11, De La Porte teaches a double glass cloth, comprising a double glass cloth which is composed of warps and wefts, and has a double structure comprising a face side structure and a back side structure, wherein the face side structure and the back side structure form two layers and are bound with a woven structure into one piece, wherein the face side structure comprises face side warps which only weave the face side structure, face side wefts which only weave the face side structure and common yarns which weave both the face side structure and the back side structure, and the back side structure comprises back side warps which only weave the back side structure, back side wefts which only weave the back side structure and the common yarns which weave both the face side structure and the back side structure (see entire document including column 1 line 4 to column 2 line 35, column 3 line to column 5 line 27, Figures 1-5).

Regarding claims 1, 3, 4, 10 and 11, De La Porte does not appear to teach that the total thickness of two layers of the double glass cloth is 10μm or more and 400μm or less. Since De La Porte is silent as to the thickness the double glass cloth, it would have been necessary and therefore obvious to look to the prior art for conventional thicknesses. Scari is classified in the same field in the art as De La Porte and provides this conventional teaching, showing that it was known in the woven fabric reinforcement art to form a woven glass fabric suitable for use in laminated composite structures as a woven fabric reinforcement, the woven glass fabric comprising a plain weave, and the fabric having a thickness ranging from 0.035 mm up to 0.13 mm (Scari, column 1 line 4 to column 3 line 15, column 3 line 42 to column 5 line 10). It would have been obvious to one of ordinary skill in the woven fabric reinforcement art at the time the invention was made to form the woven double glass fabric of De La Porte, wherein the fabrics each have the thicknesses as taught by Scari, as De La Porte and Scari are classified in the same field in the art, and motivated by the desire of forming a conventional woven glass fabric reinforcement having thicknesses known in the art to be predictably suitable for use in woven glass fabric reinforcement.

Regarding claims 1, 3, 4, 10, and 11, the prior art appears to teach the claimed gap, formed by being enclosed by a warp of the face side structure and a warp of the back side structure, the warps facing each other, and a weft of the face side structure and a weft of the back side structure, the wefts facing each other, having a smaller side and a larger side and an average length of the smaller side is at least about 0μm, as the prior art teaches that the face side and the back side can be bonded to each other with the common threads while matching each other, and since it is reasonably for one of ordinary skill in the art to expect that bonding the two sides to

each other would result in a "smaller side of the gap" being at least about 0μm. Additionally, Figures 1-5 appear to teach the claimed gap and De La Porte teaches that the properties of the cloth can be modified with cover wefts, in addition to the choice of the pile threads and cover weft threads (De La Porte, column 2 lines 35-58) in order to arrive at a denser arrangement of threads (Id., column 3 lines 22-49). Additionally, Scari teaches that optimizing the crossovers between warp and weft yarns results in dimensionally stable composite structure. It would have been obvious to one of ordinary skill in the woven fabric reinforcement art at the time the invention was made to form the woven fabric reinforcement of the prior art, wherein the warps and wefts are adjusted such that the resulting weave is a tight weave, motivated by the desire of forming a conventional woven fabric reinforcement with a desired weave in order to arrive at a denser arrangement of threads and/or dimensionally stable composite structure. Additionally, it is reasonable for one of ordinary skill in the woven fabric reinforcement art to expect that forming a woven fabric reinforcement with a tight weave results in a stiffer, stronger, denser and less flexible structure suitable for the intended application, since such characteristics naturally flow from the type of weave, absent evidence to the contrary, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the structure with a tight weave based on the desired above-mentioned characteristics.

Regarding claims 1, 3, 4, 10, and 11, the prior art teaches that the double glass cloth is suitable for use for a printed wiring board (Scari, column 1 lines 4-11). Additionally, the limitation appears to recite an intended use of the double glass cloth. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the

prior art structure is capable of performing the intended use, then it meets the claim. Since the prior art teaches a substantially similar structure and composition as the claimed double glass cloth, the invention of the prior art appears to be capable of performing the intended use.

Regarding claims 3 and 4, the prior art teaches that the face side structure and back side structure comprise a plain weave (De La Porte, column 3 lines 22-49).

Regarding claim 4, the prior art teaches that the face side structure and back side structure are bound together at a rate of at least one location per unit structure (De La Porte, column 1 line 4 to column 2 line 35, column 3 lines 22-49, column 4 line 24 to column 5 line 2, Figures 1-3). Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bind the face side structure and the back side structure with a desired rate, as it is within the level of ordinary skill to determine a suitable rate to bind the face side and back side structure based on the desired cohesion of the materials, such that binding at a higher rate would result in a stiffer, stronger, denser and less flexible structure.

Regarding claim 10, the prior art does not appear to specifically teach that the gap is formed by being enclosed by a warp and a weft adjacent to each other of the face side structure and a warp and a weft adjacent to each other of the back side structure. However, the prior art teaches that the double layer cloths are each woven in a manner derived from a plain weave as shown in Figures 1-5. Additionally, the prior art teaches that the face cloth and the back cloth are attached to each other spaced apart, or it is possible for the face cloth and the base cloth to be bonded to one another while matching each other (De La Pore, column 3 lines 22-63). Additionally, the prior art teaches that the threads of the face cloth and the back cloths can be arranged offset relative to one another (Id., column 5 lines 22-27). Therefore, although the prior

art does not disclose the claimed structure, it is reasonable for one of ordinary skill in the art to expect that the claimed structure naturally flows from the structure in the prior art, since the prior art teaches an invention with a substantially similar structure and composition as the claimed invention. Products of identical structure and composition cannot have mutually exclusive properties. The burden is on the Applicants to prove otherwise.

Regarding claim 11, although the prior art does not appear to teach that the double glass cloth has been subjected to a fiber-opening processing by a water flow pressure or by vibration at high frequency using a liquid as a medium, such a limitation appears to be a product by process limitation. Absent a showing to the contrary, it is Examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. The burden has been shifted to Applicants to show unobvious difference between the claimed product and the prior art product. The applied prior art either anticipated or strongly suggested the claimed subject matter. It is noted that if Applicants intend to rely on Examples in the specification or in a submitted declaration to show unobviousness, Applicants should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the applied prior art.

8. Claims 1, 3, 4, 10 and 11 are rejected under 35 U.S.C. 103(a) as obvious over De La Porte in view of Scari and USPN 4,590,539 to Sanjana.

Regarding claims 1, 3, 4, 10, and 11, the prior art appears to teach that it would have been obvious to one of ordinary skill in the art to adjust the warps and wefts such that the resulting weave is a tight weave within the scope of the claimed limitation requiring an average length of a smaller side of a gap enclosed by warps and wefts to be between 0μm and 50μm. Additionally, De La Porte teaches that fibers suitable for the double cloth may comprise glass fibers or polyamide fibers (De La Porte, column 2 lines 17-28) and that the woven fabric may be further impregnated with a polymer matrix (Id., column 2 lines 34-68). As further evidence that it would have been obvious to optimize the warps and wefts, Sanjana is classified in the same field in the art as the prior art, and teaches a plain woven fabric suitable for use for printed circuit boards, wherein the plain woven fabric may be embedded in a polymer matrix (Sanjana, column 1 line 13 to column 2 line 46, column 3 lines 33-59). Sanjana teaches that the plain woven fabric is preferably a tight weave as that reduces the resin content of the laminate. It would have been obvious to one of ordinary skill in the woven fabric reinforcement art at the time the invention was made to form the woven fabric reinforcement of the prior art, wherein the weave is a tight weave, as taught by Sanjana, as the prior art and Sanjana are classified in the same field in the art, and motivated by the desire of forming a conventional woven fabric reinforcement with a tight weave to reduce the resin content of the laminate, based on the intended application.

9. Claims 1, 3, 4, 10, and 11 are rejected under 35 U.S.C. 103(a) as obvious over De La Porte in view of Scari and Applicants' specification.

Regarding claims 1, 3, 4, 10, and 11, the prior art appears to teach a substantially similar structure and composition as the claimed invention. Additionally, although the prior art does not appear to specifically teach that the double glass cloth has been subjected to a fiber-opening process, Applicants' specification expressly teaches that it was known in the glass cloth art at the time the invention was made to subject woven glass cloth to a fiber-opening process to reduce the variation in the amount of glass in the thickness direction and in the shape of holes (*see* Applicants' specification at pages 5 and 6). It would have been obvious to one of ordinary skill in the glass cloth art at the time the invention was made to form the double glass cloth of the prior art, wherein the double glass cloth has been subjected to a fiber-opening process, as disclosed by Applicants' specification, motivated by the desire of forming a conventional double glass cloth which has been subjected to a known process which is known to advantageously reduce the variation in the amount of glass in the thickness direction and in the shape of holes, and such a process would yield a predictably resulting double glass cloth, suitable for the intended application.

10. Claims 1, 3, 4, 10, and 11 are rejected under 35 U.S.C. 103(a) as obvious over De La Porte in view of Scari and Sanjana and Applicants' specification.

Regarding claims 1, 3, 4, 10, and 11, the prior art appears to teach a substantially similar structure and composition as the claimed invention. Additionally, although the prior art does not appear to specifically teach that the double glass cloth has been subjected to a fiber-opening process, Applicants' specification expressly teaches that it was known in the glass cloth art at the time the invention was made to subject woven glass cloth to a fiber-opening process to reduce

the variation in the amount of glass in the thickness direction and in the shape of holes (*see* Applicants' specification at pages 5 and 6). It would have been obvious to one of ordinary skill in the glass cloth art at the time the invention was made to form the double glass cloth of the prior art, wherein the double glass cloth has been subjected to a fiber-opening process, as disclosed by Applicants' specification, motivated by the desire of forming a conventional double glass cloth which has been subjected to a known process which is known to advantageously reduce the variation in the amount of glass in the thickness direction and in the shape of holes, and such a process would yield a predictably resulting double glass cloth, suitable for the intended application.

Response to Arguments

Applicants' arguments filed October 28, 2009, have been fully considered but they are not persuasive. Applicants argue that De La Porte has a wider gap, and making the gap narrower would not have been obvious to one skilled in the art based on the teachings of the prior art. Examiner respectfully disagrees. As set forth above, the prior art appears to teach the claimed gap, formed by being enclosed by a warp of the face side structure and a warp of the back side structure, the warps facing each other, and a weft of the face side structure and a weft of the back side structure, the wefts facing each other, having a smaller side and a larger side and an average length of the smaller side is at least about 0μm, as the prior art teaches that the face side and the back side can be bonded to each other with the common threads while matching each other, and since it is reasonably for one of ordinary skill in the art to expect that bonding the two sides to each other would result in a "smaller side of the gap" being at least about 0μm. Additionally,

Figures 1-5 appear to teach the claimed gap and De La Porte teaches that the properties of the cloth can be modified with cover wefts, in addition to the choice of the pile threads and cover weft threads (De La Porte, column 2 lines 35-58) in order to arrive at a denser arrangement of threads (Id., column 3 lines 22-49). Additionally, Scari teaches that optimizing the crossovers between warp and weft yarns results in dimensionally stable composite structure. It would have been obvious to one of ordinary skill in the woven fabric reinforcement art at the time the invention was made to form the woven fabric reinforcement of the prior art, wherein the warps and wefts are adjusted such that the resulting weave is a tight weave, motivated by the desire of forming a conventional woven fabric reinforcement with a desired weave in order to arrive at a denser arrangement of threads and/or dimensionally stable composite structure. Additionally, it is reasonable for one of ordinary skill in the woven fabric reinforcement art to expect that forming a woven fabric reinforcement with a tight weave results in a stiffer, stronger, denser and less flexible structure suitable for the intended application, since such characteristics naturally flow from the type of weave, absent evidence to the contrary, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the structure with a tight weave based on the desired above-mentioned characteristics.

Additionally, the prior art appears to teach that it would have been obvious to one of ordinary skill in the art to adjust the warps and wefts such that the resulting weave is a tight weave within the scope of the claimed limitation requiring an average length of a smaller side of a gap enclosed by warps and wefts to be between 0μm and 50μm. Additionally, De La Porte teaches that fibers suitable for the double cloth may comprise glass fibers or polyamide fibers (De La Porte, column 2 lines 17-28) and that the woven fabric may be further impregnated with a

polymer matrix (Id., column 2 lines 34-68). As further evidence that it would have been obvious to optimize the warps and wefts, Sanjana is classified in the same field in the art as the prior art, and teaches a plain woven fabric suitable for use for printed circuit boards, wherein the plain woven fabric may be embedded in a polymer matrix (Sanjana, column 1 line 13 to column 2 line 46, column 3 lines 33-59). Sanjana teaches that the plain woven fabric is preferably a tight weave as that reduces the resin content of the laminate. It would have been obvious to one of ordinary skill in the woven fabric reinforcement art at the time the invention was made to form the woven fabric reinforcement of the prior art, wherein the weave is a tight weave, as taught by Sanjana, as the prior art and Sanjana are classified in the same field in the art, and motivated by the desire of forming a conventional woven fabric reinforcement with a tight weave to reduce the resin content of the laminate, based on the intended application.

Applicants argue that De La Porte teaches pile threads whereas the claimed invention is directed to common threads. Examiner respectfully disagrees. The pile threads of the prior art are within the scope of the common threads as they are substantially similar in structure and perform a substantially similar function, and the resulting structure is substantially similar to the claimed invention. Applicants have not shown or provided evidence that the threads of the prior art and the resulting structure are necessarily distinguished from the claimed invention.

Conclusion

11. Applicants' amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER Y. CHOI whose telephone number is (571)272-6730. The examiner can normally be reached on Monday - Friday, 08:00 - 15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter Y Choi/
Examiner, Art Unit 1794

/Andrew T Piziali/
Primary Examiner, Art Unit 1794